REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 29 and 31 are amended. Claims 1, 3-14 and 29-38 are pending in the application. Re-examination and reconsideration of the application, as amended herein, are requested.

Claims 1, 6-8, 10-13, 29-32 and 38 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,498,043 to Schulman et al. In addition, claims 3, 4, 9 and 33-36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shulman et al. in view of U.S. Patent No. 6,414,835 to Wolf et al. Also, claims 5 and 37 was rejected under 35 U.S.C. 103(a) as being unpatentable over Schulman '043 in view of U.S. Patent No. 6,516,808 to Schulman. These rejections are respectfully traversed, in view of the claims as amended herein.

In particular, as amended, claim 1 recites a sensing apparatus that includes a substrate having first and second sides and a via comprising a **linear** hollow path formed from the first side of the substrate to the second side of the substrate and filled with an electrically conductive material for making electrical contact from the first side of the substrate to the second side of the substrate, wherein the via is hermetically sealed from the first side of the substrate to the second side of the substrate. Similar features are recited in amended independent claims 29 and 31.

As described in the present specification, embodiments of the present invention involve a substrate in which a linear hollow path is formed from the first side (sensor side) to the second side (electronics side), where the linear hollow path is filled with a conductive filling material. The hollow path is a linear path that may be formed by relatively fast and simplified processes (as compared to stair-step vias), for example, by laser drilling, punching or other suitable manufacturing processes capable of producing a linear hollow path. (See, e.g., Fig. 2A and pg. 7, ll. 3-7 and pg. 9, ll. 27-29 of the present application.) Embodiments described in the present specification provide for various manners in which such a linear hollow path formed all of the way through a sensor substrate may be filled, hermetically, so that electrical conduction is provided from the sensor side of the substrate to the electronics side of the substrate in a manner that can simplify manufacturing steps and provide reliable, cost effective sensor devices.

In contrast, the Schulman and Schulman et al. patents describe more complex stair-step conductive vias, where the via is formed in sections of interconnected conductive material that is deposited on each of several different layers in a staggered (non-linear) arrangement. The stair-step conductive via does not comprise a hollow path, much less a hollow linear path formed from one side of the substrate to the other side of substrate. Instead, the stair-step conductive via is composed of conductive deposits formed on multiple layers and interconnected by conductive traces. The conductive deposits are not provided in a hollow path and are not linear from one side of a substrate to the other side of the substrate. Instead, Schulman's conductive deposits are deposited on top of various layers of the multi-layer structure, in a laterally offset (or staggered) arrangement.

Because a portion of Schulman's stair-step via must be formed on each of several layers, each step portion is formed on a layer separately (in a separate process step) from another step portion formed on another layer. Thus, the stair-step vias require multiple manufacturing steps (for forming the multiple layers) to form separate conductive sections of a via on each layer and forming conductive traces between layers for coupling conductive sections of the via, for example, as shown by traces 72 and 74 in the Wolf et al. patent. Accordingly, significant advantages can be provided by employing a sensor configuration as claimed, wherein a hermetic via comprises a linear hollow path filled with conductive material.

Therefore, it is respectfully submitted that the independent claims, as amended herein, are patentably distinguished over the cited references, alone or in combination. Dependant claims are believed to be allowable, at least for reasons as noted above with respect to the independent claims and for further reasons apparent from the language of the dependent claims. For example, dependent claim 32 recites that "each via comprises a conductive path formed of a single conductive material extending without interruption through the substrate from the first side of the substrate to the second side of the substrate." Dependent claim 33 recites that "the single conductive material comprises a flowable conductive filler material that is disposed within the hollow path in a flowable form and hardened within the hollow path of each via to form a solid, filled via." Dependent claim 34 recites that "each via comprises a flowable conductive filler material that is disposed within the hollow path in a flowable form and hardened within the hollow path to form a solid, filled via extending, without interruption, from the first side of the substrate to the second side of the substrate." These features are believed to further distinguish

the claimed invention over the cited references. The stair-step via configurations described in the Schulman references do not employ a flowable media disposed within a hollow path as claimed.

Furthermore, it is noted that the Wolf et al. patent is owned by Medtronic, Inc., the same entity that owns the present application. Accordingly, notwithstanding the distinctions noted above, Applicant reserves the right to seek to remove rejections by filing a statement under 35 U.S.C. 103 (c), were appropriate in the future.

Also, Applicant notes with appreciation, the courtesy of the Examiner (Ms. Cross) for conducting the telephone interview with the undersigned on February 16, 2005. The claim amendments made herein were proposed during that telephone interview. The Examiner informed the undersigned that she needed to discuss the proposed amendments with her supervisor and would contact the undersigned within a few days after the telephone interview with a response regarding whether or not the proposed claim amendments are approved and render the application allowable. However, the undersigned did not receive a further call or communication from the Examiner and, therefore, is submitting the claim amendments herein. Because the undersigned has attempted to seek the Examiner's assistance and approval of claim amendments to place the application in condition for allowance, the Examiner is requested to contact the undersigned in the event that the Examiner believes that, for any reason, the present amendment does not place the application in condition for allowance.

In view of the foregoing, it is respectfully submitted that the present application is in condition for allowance. Re-examination and reconsideration are requested. If, for any reason, the Examiner believes that the application is not in condition for allowance, the Examiner is requested to contact the undersigned attorney at the Los Angeles telephone number (310) 975-7963, to discuss steps that the Examiner believes may be needed to place the application in condition for allowance.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to

Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

Date: March 1, 2005

By: _____

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